

**REMARKS**

In this Amendment, Applicant has amended Claims 6, 12 and 13 to overcome the rejection and specify different embodiments of the present invention. The support for the amendment can be found throughout the specification. It is respectfully submitted that no new matter has been introduced by the amended claims. All claims are now present for examination and favorable reconsideration is respectfully requested in view of the preceding amendments and the following comments.

**REJECTIONS UNDER 35 U.S.C. § 112 SECOND PARAGRAPH:**

Claims 6 – 10, 12 and 13 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is respectfully submitted that the rejections have been overcome by this amendment. In Claim 6, the term “bicarbonate” in the preamble of the claim has been deleted. In Claim 12, the term “humectant” has replaced by “tensioactive agent”. In Claim 13, “30° C” should be replaced by “25° C”.

Therefore, the rejection under 35 U.S.C. § 112, second paragraph, has been overcome. Accordingly, withdrawal of the rejections under 35 U.S.C. § 112, second paragraph, is respectfully requested.

**REJECTIONS UNDER 35 U.S.C. § 103:**

Claims 6 – 10, 12 and 13 have been rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Kuchikata et al. (U.S. Patents 5,872,078 and 6,228,807), hereinafter Kuchikata.

Applicant traverses the rejection and respectfully submits that the embodiments of the presently claimed invention are not obvious over the cited reference because they are significantly different from the disclosure of Kuchikata in that the present invention defines a dry method of making a solid herbicidal formulation of N-(phosphonomethyl)glycine in the form of ammonium bicarbonate salt with solid tensioactive agents, which is neither disclosed or suggested in the Kuchikata reference. In fact, Kuchikata only discloses the conventional wet method.

It is respectfully submitted that the Examiner has not present a prima facie case of obviousness against the present application. More specifically, the Examiner indicated that it would have been obvious to a person of ordinary skill in the art at time of the present invention to prepare a solid herbicidal formulation of a glyphosate and a “tensioactive agent”, which is a surface-active agent in solid form **because the references teaches sodium bicarbonate and glyphosate**. Applicant respectfully submits that “[T]he mere fact that references **can** be combined or modified **does not render** the resultant combination **obvious** unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)” (emphasis added, see MPEP 2143.01). The Examiner further based on the obviousness analysis on three legal precedents – *In re Opprecht*, *In re Bode* and *In re Fracalossi* (not appeared in MPEP). However, no factual analysis required by *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966) is undertaken (see MPEP 2141). Applicant respectfully submits that the Examiner has not pointed out in Kuchikata the motivation or reasonable expectation of success for modification of to achieve the present invention as defined. As stated in *Ex parte Tanksley*, 37 USPQ2d 1382, 1386 (Bd. Pat. App. & Int. 1994):

With respect to the rejections under 35 U.S.C. § 103, we find that the cited prior art provides no suggestion which would have led a person having ordinary skill from “here to there,”.... We have no doubt that the prior art could be modified in such a manner to arrive at appellants’ ... [invention]. The mere fact, however, that the prior art could be modified would not have made the modification obvious unless the prior art suggests the desirability of the modification. *In re Gordon*, 733 F. 2d 900, 221 USPQ (Fed. Cir. 1984) ....

In addition, the legal precedents of *In re Brown*, *In re Best* and *In re Marosi* are related to product by process claims. The present application defines methods, not products. There legal precedents do not establish the rule that when the prior art can be modified into the claimed method, then the burden is shifted to Applicant to prove unexpected result. Such characterization of the legal precedent is improper.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (MPEP 2143). It is respectfully submitted that Kuchikata does not teach the limitation of using dry solid tensioactive agent that is solid at ambient temperature of 25°C. There is no motivation in Kuchikata to modify the wet method to the dry method of the present invention. In addition, there is no reasonable expectation of success to a person of ordinary skill in the art at the time of the present invention that the dry method will succeed in obtaining a properly homogenized herbicide. Furthermore, as stated in the Declaration under 37 CFR 1.132 in the response filed September 15, 2005, the presently claimed method is discovered "surprisingly and unexpectedly" (see paragraphs 12 and 15 of page 3 of the Declaration).

More specifically, Claim 6 define a method of the present invention as follows:

Claim 6: A process for the preparation of a solid herbicidal formulation of N-(phosphonomethyl)glycine, in powder, granule or flake form, soluble or dispersible in water, comprising Glyphosate (N-(phosphonomethyl)glycine) in the form of ammonium salt and 5% to 30% by weight of one or more hydrosoluble tensioactive agents, which are compatible with Glyphosate and solids at ambient temperature of about 25 °C, said process comprising the steps of:

(a) mixing N-(phosphonomethyl)glycine with an equimolar quantity of ammonium bicarbonate and between 5% and 30% by weight of the solid tensioactive agent of the dry weight of the final mixture, at 25 °C,

- (b) kneading or mixing the resulting formulation until the mixture is completely homogenized, and
- (c) processing the resulting mixture until obtaining the desired formulation, in powder, granules, or flakes.

The main characteristic of the process of instant invention lies in the fact that step (a) comprises the mixing of Glyphosate, ammonium bicarbonate and the solid tensioactive agent, substantially without any added water. This means that step (a) consists essentially in mixing three ingredients that are **solid at ambient temperature** and are **substantially devoid of water** (only Glyphosate, having technical grade, may contain minor quantities of water).- Also, as it has been pointed out and shown in the response submitted on September 15, 2005, the solid tensioactive agents used in the process of instant application are **dusty** solids, so that it can be noticed that step (a) of the process claimed consists of a dry process mixing of the powdered ingredients. This ingredient mixture, independently of the sequence in which the ingredients are added, is a mixture easy to mix and to knead (step (b) of the process) in conventional equipments and wherein the chemical neutralization reaction between Glyphosate (acid) and ammonium bicarbonate (basis) releases water and carbon dioxide, thereby favoring the mixing and the complete neutralization reaction without impairing the particulate texture of the mixture nor the easiness of its subsequent handling (step (c) of the process).

Kuchikata defines (see claim 1) a dry, water-soluble composition comprising Glyphosate, or one of its soluble salts, a co-herbicide and a least **one surfactant which, in its neat form, is liquid at 25° C** and gelifies in water. Such herbicide compositions are the only invention disclosed in Kuchikata. Thus, an skilled artisan must situate himself/herself at the time of the present invention, without the knowledge of the present invention, to analyze the whole contents of the description contained in Kuchikata, in order to gain knowledge of the specific compositions disclosed in the document and of the methods for preparing them. In the "Summary of the invention" of Kuchikata, the person of ordinary skill in the art takes again cognizance of that the compositions of the Kuchikata comprise a water-soluble Glyphosate salt and additionally one or more **liquid** surfactants and other components among which there are cited sulfate salts as well as chlorides, urea, humectants, co-herbicides, colorants, etc. (see column 2, lines 56 to 67).

The “Summary of the invention” also discloses, generically, the processes for preparing said compositions (column 2, lines 6 to 45). At this point, the person of ordinary skill in the art will be strongly induced to think that the methods for preparing the Kuchikata compositions are methods using liquid surfactants (column 3, lines 13 to 17) as it is disclosed in claim 1, and also that they are **wet process** methods (column 3, lines 18 to 37). Further, in the “Detailed description of the invention”, Kuchikata sets out, in the first paragraph, that **the compositions of the invention do comprise a liquid surfactant**, and defines afterwards that the term “liquid” means a substance that, at 25° C, is in a fluid state.

In column 5, lines 39 to 67, and column 6, lines 1 to 15, Kuchikata enumerates specifically appropriate examples of liquid surfactants pertaining to diverse classes according to their chemical nature (non ionic, cationic, etc.), and mentions in column 6, lines 27 to 30, that **the granules preferred in the invention are prepared by using an ethoxylated amine with 15 to 20 mol of ethylene oxide, which amine, as it will be shown in the following, is a liquid surfactant.**

In column 7, lines 1 to 19, Kuchikata describes how these compositions containing liquid surfactants are prepared typically, and mentions the possibility of spraying the liquid surfactant on the soluble Glyphosate salt and the possibility of adding water in order to further a form of granulation.

According to Kuchikata, outwardly the mixed composition looks typically as something between a humid dust and a **paste** (column 7, lines 20 to 25). As it can be noticed, when what is sought is to prepare compositions with soluble Glyphosate salts and surfactants, the “Detailed description of the invention” aims basically at the description of compositions and methods using liquid surfactants optionally in the presence of water.

Even though Kuchikata has not made a breakdown of the drawbacks of the compositions and processes pertaining to the art prior to the patent, it seems evident that the technical problem Kuchikata has tried to solve is to propose new dry and water-

soluble (or dispersible) Glyphosate compositions and salts thereof that are easy to handle. To that purpose, Kuchikata has described, prior to the Examples, several alternative techniques for preparing said compositions. At this point, the person of ordinary skill in the art is again strongly induced to think that the Kuchikata patent has optimized a method for preparing said compositions **containing a water-soluble Glyphosate salt combined with one or more liquid surfactants and optionally with water**. The description of the Kuchikata patent does not disclose to the person of ordinary skill in the art any technical inconveniency or drawback which the techniques used by Kuchikata might entail. Moreover, from the standpoint of rheology, the processes used by Kuchikata for preparing herbicide compositions seem to be technically appropriate. Hence, the person of ordinary skill in the art would have no reason to depart from the teachings of the Kuchikata, or imagine alternative solutions.

Furthermore, Kuchikata contains 44 examples describing diverse herbicide formulations and processes for preparing them. Said examples are preceded by a general description (as from column 8, line 15) disclosing, among other information, the general technique used for preparing a composition containing ammonium Glyphosate and a surfactant. According to said technique, once the ammonium Glyphosate has been prepared, the surfactant added is **preferably** an ethoxylated fatty tallow amine with an average contents of 15.-18 mol of ethylene oxide. Said surfactant is marketed under the name **MON-0818 and it is a liquid surfactant** supplied by Monsanto, as hereby respectfully enclosed for Examiner's reference as Annex I (see enclosed Annex 1: Product Information). The typical yield of the mixture of MON-0818 with ammonium Glyphosate is **a very stiff dough** (see column 8, lines 47 and 48). Afterwards, Kuchikata states that the mixing equipment is chosen appropriately so as to ensure that it be capable not only of mixing a thick, stiff dough, but that it must be also a steam jacket **in order to permit the heating of the mixture and to eliminate the water excess to form a dust** if a further step of bread granulation is desired (see column 8, lines 48 and 55).

Preparation Example 3 (see column 10, lines 56 to 67) is representative of said technique by which there are obtained 135 grams of a **hand-mixed solid** containing 105 grams of ammonium Glyphosate and 30 grams of MON-0818 absorbed **on the granules**.

None the less, Kuchikata does not mention in this example that **the solid obtained be a very stiff dough, which strongly conditions its processing for obtaining the granules.**

In Example 4 (column 11), we find a repetition of the technique of the foregoing example by using the Genaminte T-150 surfactant, which is a liquid surfactant as recorded in Annex I. In said Example, Genamine T-150 is first combined with a **humid Glyphosate cake**, whereupon ammonium bicarbonate is added. As it is set down in this example, the (neutralization) reaction “**seemed much slower and incomplete**”. To overcome this drawback, another liquid disperser is added (AXS-40) to disperse the gel structure inhering in said process and the mixture needs eventually to be dried in an oven in order to yield the granulate product.

In Example 5, the liquid surfactant Genamine T-150 is added at a 25% level to previously dried ammonium Glyphosate. From this example, **no dry formulation or free flowing was obtained**. The resulting mixture was dried overnight at 60° C in an oven yielding a still sticky sample. Therefore, in Examples 3, 4 and 5, Kuchikata teaches that the processes used for preparing the **ammonium Glyphosate / liquid surfactant mixtures show technical drawbacks already at the laboratory stage** to a person of ordinary skill in the art skilled in the art. Such drawbacks can be summed up in the following conclusion: **Mixtures of Glyphosate, ammonium bicarbonate and a liquid surfactant yield sticky solid mixtures difficult to handle and must undergo heating in order to eliminate water, not ensuring however its transformation into free flowing dust.**

Kuchikata proposes simultaneously a solution for such technical inconveniencies since it discloses, in the examples examined, that a moderate technical treatment (at 60° C) would make it possible to transform the compositions of the invention into mixtures easy to handle and to transport. Notwithstanding, said technical treatment implies necessarily a further grinding step in order to transform the dry solid dough into a product easy to handle and to transport.

In the remaining Examples 6 to 45, Kuchikata proposes several additional formulations containing ammonium glyphosate. All the formulations exemplified by Kuchikata in these additional examples do contain liquid surfactants. It is worth considering the formulations of examples 9 and following, in which use is made also of considerable percentages of ammonium sulfate and/or sodium sulfate. Both ammonium sulfate and sodium sulfate are optional components of the herbicide formulations proposed by Kuchikata and the inclusion of said compounds, among others, has been foreseen in column 2, lines 61 to 68 of Kuchikata. However, Kuchikata does not specify the reason for which said (sodium and ammonium) sulfate salts are added to many exemplified formulations, although it is a person of ordinary skill in the art knows that said optional components **are not surfactants** and that their inclusion in the formulations exemplified by Kuchikata would be an inclusion as inert filling components with the aim of improving the structure and texture of the compositions prepared and, consequently, make their handling and granulating more easy.

In summary, Kuchikata proposes herbicide formulations containing ammonium glyphosate wherein **liquid surfactants are always used at ambient temperature**, and discloses furthermore thermal treatments for eliminating water, if necessary, possible and necessary grinding steps and certain filling agents in order to improve the physical properties of the formulations prepared in the examples. In other words, even though Kuchikata discloses in its description and examples some technical drawbacks coming up when the ingredients of the claimed formulations are mixed, Kuchikata does also mention the appropriate technical solutions to overcome said drawbacks. Kuchikata does not provides the motivation to modification of Kuchikata and reasonable success of the modification towards the present invention. This means that a person of ordinary skill in the art, facing a possible reproduction of the invention of Kuchikata would not have had any reason to depart from the teachings of said patent by imagining alternative solutions to those proposed by Kuchikata.

Furthermore, it is respectfully submitted that, for an obviousness analysis under 35 U.S.C. 103, "impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." (MPEP 2142). The



question the Examiner, stepping into the shoes of the person of ordinary skill in the art, is the following: Why did Kuchikata disregard the solid surfactants at ambient temperature for preparing the formulations of Kuchikata reference if, as the Examiner maintains, this solution was obvious to experts in the matter?

Applicant respectfully submits that the answer to this question is to be found in the very description and examples of Kuchikata. In fact, in the first place it would be evident in the prior art that, in order to attain an intimate and homogeneous mixture of the two ingredients (for instance, a glyphosate salt and a surfactant), it would be preferable that one of said ingredients be a liquid in which the other ingredient could disperse or dissolve. Secondly, if the purpose is to obtain an homogeneous mixture of three ingredients (for instance, glyphosate, ammonium bicarbonate and a surfactant) in which a chemical neutralization reaction is to occur, it would also be *prima facie* evident to a person of ordinary skill in the art that the surfactant to be selected should be liquid, since a chemical reaction occurs usually more easily in a liquid phase than in a solid-solid system. This situation of mixing and chemically reacting the three ingredients is mirrored in example 4 of Kuchikata. Notwithstanding, Kuchikata has stated that in this system the chemical reaction (of glyphosate with ammonium bicarbonate) was slow and incomplete (see col. 11, 15 – 16). In view of the unfavorable results of the experience from example 4 where less water is used, the person of ordinary skill in the art would be discouraged or disregard the use of solid surfactants. This obviously teaches away from the present invention or proves that the present invention using the dry solid surfactants in the dry method was unexpected to a person of ordinary skill in the art.

It is respectfully submitted that **all the technical drawbacks posed in patent Kuchikata have now been overcome, unexpectedly and surprisingly, by the present invention**, in which a simple, different and non-obvious solutions is proposed. The process claimed in the present application comprises essentially the mixing of the following dry ingredients: glyphosate, ammonium bicarbonate and a solid tensioactive agent at ambient temperature, with the result being **a solid mixture easy to handle and to process** into granules, scales and dust. **In this process**, as a result of mixing and kneading the ingredients, **no dough difficult to handle or to process is formed, no**

**additional thermal treatment is needed to arrange and condition the mixture, no filling substances are required to improve the rheological qualities of the mixture, and the neutralization reaction is complete.** All these advantages derive from a simple, novel and fundamentally non-obvious process over Kuchikata, since the Kuchikata overcomes the technical drawbacks of the mixing of the ingredients by means of different techniques, such as, use of thermal treatments, adding water, filling substances because it uses liquid surfactants as main ingredients of the herbicide formulations.

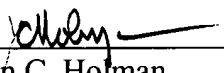
Therefore, the rejection under 35 U.S.C. § 103 has been overcome. Accordingly, withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

Having overcome all outstanding grounds of rejection, the application is now in condition for allowance, and prompt action toward that end is respectfully solicited.

Respectfully submitted,

JACOBSON HOLMAN PLLC

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Atty. Dkt. No.: P69259US0

By   
John C. Holman  
Registration No. 22,769

Enclosure:

Annex 1: Product Information



## Product Information

## Surface Chemistry

# Ethomeen® T/25

Tallow amine 15 EO  
CAS no 61791-26-2

Ethomeen® T/25 is an ethoxylated tallow amine.

### Specifications

Appearance at 25°C <sup>1)</sup>	Amber liquid
Moisture, % <sup>2)</sup>	max 1
Colour, Gardner <sup>3)</sup>	max 8
Equivalent Mass <sup>4)</sup>	890 – 950
Amine Number <sup>4)</sup> mgKOH/g	59 – 63
pH, 1% in water <sup>5)</sup>	8.0 – 10.0

#### Method of analysis

<sup>1)</sup> Visual, <sup>2)</sup> KL 510.00, <sup>3)</sup> KL 315.00, <sup>4)</sup> KL 625.81  
<sup>5)</sup> KL 502.00

Methods of analysis are available upon request.

### Typical Data

Chemical and Physical data	Typical values
Density, 20 °C	1030 kg/m <sup>3</sup>
Flash point (seta)	>100 °C
Pour point	5 °C

#### Solubility

The solubility of 5% Ethomeen® T/25 at 20°C is as follows:

Ethanol	soluble
Isopropyl alcohol	soluble
Low aromatic solvent	insoluble
Propylene glycol	soluble
Water	soluble
White spirit	insoluble
Xylene	soluble

### Application

Ethomeen® T/25 can be used:

- as agricultural formulations
- in metal treatment formulations
- as emulsifier in oil additive formulations
- as emulsifier

### Handling

Ethomeen® T/25 should always be homogenized before use, unless the entire quantity is used.

### Precaution for Use

Avoid eyes and skin contact. During handling, wear rubber gloves and chemical splash goggles. In case of eye contact, flush with large amount of water for at least 15 minutes and get medical attention. In case of skin contact, wash with water. For further information on health and safety see our *Safety Data Sheet*.

### Further Information

For further information, technical service and samples, please contact our nearest Akzo Nobel Sales office or agent/distributor.

The specifications & properties listed above are for products manufactured in Singapore.

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## STEPANATE® AXS40

Actives, % 40

Chemical Description AMMONIUM XYLENE SULPHONATE

Product Application Solubilizer, coupling agent.

Form at 25C° Liquid

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## Surfactants

### Fatty amines and derivatives

Trade name	Country of origin	Chemical name / structure	Active content [%]	Appearance [20°C]	Application / Remarks
<b>Tallow fatty amine ethoxylates</b>					
Genamin T 020	Germany Mexico	Tallow fatty amine ethoxylate $R-N \left\langle \begin{array}{c} (CH_2CH_2O)_x H \\ (CH_2CH_2O)_y H \end{array} \right\rangle$ $x+y = 2$ $R = \text{tallow}$	100	liquid	Special surfactants for industrial cleaning agents, dispersing agents, nonionic emulsifier and co-emulsifier, also suitable for cationic emulsions.
Genamin T 120	Brazil	Tallow fatty amine ethoxylate $R-N \left\langle \begin{array}{c} (CH_2CH_2O)_x H \\ (CH_2CH_2O)_y H \end{array} \right\rangle$ $x+y = 12$ $R = \text{tallow}$	100	beige to brownish, clear liquid	Special surfactants for industrial cleaning agents, dispersing agents, nonionic emulsifier and co-emulsifier, also suitable for cationic emulsions.
Genamin T 150	Brazil Germany Mexico	Tallow fatty amine ethoxylate $R-N \left\langle \begin{array}{c} (CH_2CH_2O)_x H \\ (CH_2CH_2O)_y H \end{array} \right\rangle$ $x+y = 15$ $R = \text{tallow}$	100	brown, clear, viscous liquid	Special surfactants for industrial cleaning agents, dispersing agents, nonionic emulsifier and co-emulsifier, also suitable for cationic emulsions.
Genamin T 200	Brazil Mexico	Tallow fatty amine ethoxylate $R-N \left\langle \begin{array}{c} (CH_2CH_2O)_x H \\ (CH_2CH_2O)_y H \end{array} \right\rangle$ $x+y = 20$ $R = \text{tallow}$	100	brown, clear, viscous liquid	Special surfactants for industrial cleaning agents, dispersing agents, nonionic emulsifier and co-emulsifier, also suitable for cationic emulsions.

# Monsanto

## Safety Data Sheet

### 1. IDENTIFICATION

#### Preparation

MON 0818

#### Company

Monsanto Europe S.A. - Avenue de Tervuren 270 - B-1150 Brussels,  
Belgium - Tel. +32(0)2.7764111 - Fax +32(0)2.7764040

#### Emergency telephone

Antwerp, Belgium +32(0)3.5685123 - UK +44(0)1865.407333

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### Composition

69-73 % w/w Ethoxylated tallowamine (693-734 g/l)

CAS No 61791-26-2

21-29.5 % w/w Antifreeze

(including Ethylene Glycol: < 6%

CAS No 107-21-1, EU No E2034733)

3.5-4 % w/w Water

#### Application

Surfactant

### 3. HAZARDS IDENTIFICATION

#### Human health effects

Harmful if swallowed.

Harmful in contact with skin.

Risk of serious damage to eyes.

May cause sensitization by skin contact.

#### Environmental effects

May cause adverse effects to the aquatic environment, if recommended use instructions are not followed.

### 4. FIRST-AID MEASURES

#### Inhalation

Remove patient to fresh air.

If breathing is difficult give oxygen.

Apply artificial respiration if patient is not breathing.

Obtain medical attention immediately.

#### Skin contact

Take off immediately all contaminated clothing.

Take off contaminated wristwatch, jewelry.

Wash immediately with plenty of water.

Continue for at least 15 minutes.

Grossly contaminated clothing: remove to a safe distance.

#### Eye contact

Rinse immediately with plenty of water.  
Continue for at least 15 minutes.  
Obtain medical attention from an eye specialist.

#### **Ingestion**

Do not induce vomiting.  
Give to drink water or milk, if available.  
Never give anything by mouth to an unconscious person.  
Obtain medical attention immediately.

#### **Medical advice**

Over-exposure symptoms  
If swallowed: nausea, vomiting, diarrhea and general gastro-intestinal irritation. Ingestion of 15 g or ml, or more, has been shown to cause hypotension and pulmonary edema.  
No specific antidote.  
Treat symptomatically.  
Keep patient under observation until condition is satisfactory and stable.

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### **5. FIRE FIGHTING MEASURES**

#### **Extinguishing media:**

Extinguish with waterspray, foam, CO2, dry chemical.  
Keep containers cool by spraying with water if exposed to fire.  
Isolate burning container in open air or well ventilated area.  
If possible remove other containers from area of fire.

#### **Exposure hazards:**

Material burns to give toxic fumes.  
In case of fire and/or explosion do not breathe fumes.  
In case of fire warn everybody of toxic hazard.

#### **Protective equipment:**

Firefighters, and others exposed, wear self-contained breathing apparatus.  
Thoroughly clean equipment after use.

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### **6. ACCIDENTAL RELEASE MEASURES**

#### **Personal precautions:**

Use personal protection recommended in section 8.  
Wash thoroughly after handling or contact.

#### **Environmental precautions:**

Keep unauthorized persons, children and animals away from the affected area.  
Warn everybody of toxic hazard and corrosive hazard.  
Keep out of drains and water courses.  
If substance has entered a water course or sewer or contaminated soil or vegetation, notify authorities.  
In case of major spills notify authorities.

#### **Methods for cleaning up:**

Absorb in earth or sand.  
Sweep up into containers for disposal.  
Dig up heavily contaminated soil and place in drums.  
(Refer to section 10 for types of containers and drums).  
Wash spill area with soap and water.  
Refer to Section 13 for disposal of spilled material.

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### **7. HANDLING AND STORAGE**

#### **Handling**

Only trained personnel should use this product.  
Sensitized persons should avoid further contact.  
Use only in well ventilated areas.  
Avoid contact with eyes.  
Have eye wash facilities immediately available at any location where eye contact can occur.  
Avoid contact with skin.  
When using do not eat, drink or smoke.

Wash thoroughly after handling or contact.  
Thoroughly clean equipment after use.  
Observe all recommended safety precautions until container is cleaned, reconditioned or destroyed.

#### **Storage**

Keep out of reach of children.  
Keep away from food, drink and animal feedingstuffs.  
Keep away from living quarters.  
Keep locked up.  
Keep only in the original container.  
Keep container tightly closed and in a well ventilated place.  
Store above 7 °C.  
Keep in a cool place.  
If thickened, place in warm room and shake frequently to put back into solution.  
Minimum shelf life: 2 years.

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### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

#### **Engineering measures**

Ensure adequate ventilation to keep vapour concentration below TLV.

#### **Occupational exposure limit**

Ethylene glycol= 50 ppm ceiling.

#### **Respiratory protection**

In case of insufficient ventilation, wear suitable respiratory equipment.

#### **Hand protection**

Wear impermeable gloves.

#### **Eye protection**

Wear chemical goggles.

#### **Skin protection**

Wear face protection.  
Wear suitable protective clothing.

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### **9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	: clear light amber liquid
Odour	: mild
Flash point open cup	: 149 °C
Specific gravity	: 1.05 (At 25 °C)
pH	: 9-10.5 (1% solution)
Viscosity	: approx. 250 cps at 25 °C
Cloud point	: minimum 60 °C
Evaporation rate	: slower than ether vapor
Solubility in water	: completely miscible at 20 °C. (no gel for a 50% solution)
Soluble in	: acetone

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### **10. STABILITY AND REACTIVITY**

#### **Conditions to avoid**

If strongly heated may catch fire and give off toxic fumes.

#### **Materials to avoid**

Attacks strong oxidizing agents.

#### **Hazardous decomposition products**

Nitrogen oxide, carbon Monoxide, carbon dioxide.

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### **11. TOXICOLOGICAL INFORMATION**

#### **Laboratory data**

##### Similar preparation

Oral LD<sub>50</sub> (rat): 1200 mg/kg.



Dermal LD<sub>50</sub>(rabbit): 1580 mg/kg.

Mean EC-eye irritation scores (rabbit, 24h exposure):

Corrosive to the eyes causing irreversible damage within 48 hrs in 6/6 rabbits. Risk of serious damage to eyes.

Mean EC-skin irritation scores (rabbit, 4h exposure):

redness: 0

swelling: 0

The incidence of positive skin reactions in the Guinea pig Buehler test is 40 %.

#### Surfactant

Ethoxylated tallowamine was shown to be non mutagenic in the Ames/Salmonella reverse mutation assay. 90-day dietary in rats: NOAEL (No observable adverse effect level)= 500 ppm.

In a teratology test to female rats, the following NOAEL were found: for maternal toxicity - 15 mg/kg/day; for developmental toxicity - 300 mg/kg/day. The developmental effect can be secondary to maternal toxicity.

#### Ethylene Glycol

Laboratory studies have shown that ethylene glycol may have toxic effects to animal kidneys and may produce birth defects and fetal toxicity after repeated oral or inhalation exposures.

#### Human data:

May cause allergic skin reaction.

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### 12. ECOLOGICAL INFORMATION

#### Test results:

#### Preparation

#### Aquatic toxicity

96h LC<sub>50</sub>:

Bluegill sunfish (Lepomis macrochirus): 1.3 mg/l.

Rainbow trout (Oncorhynchus mykiss): 4.2 mg/l.

48h EC<sub>50</sub>:

Water flea (Daphnia magna): 2.0 mg/l.

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### 13. DISPOSAL CONSIDERATIONS

#### Product

As far as possible recover and store any remaining non-contaminated product in original package of the same product. Send to special chemical waste disposal facility or burn only in special, controlled high temperature incinerator.

#### Containers

Triple rinse empty containers.

Give them to public waste disposal services, to be disposed of as hazardous waste.

Do not re-use containers.

Do not contaminate waterways, ponds or ditches with waste product or container.

Avoid discharge into environment.

All local and national regulations should be followed.

Consult Monsanto for specialist disposal advice.

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### 14. TRANSPORT INFORMATION

Regulated for transport:

#### Proper shipping name

Environmentally hazardous substance, liquid, N.O.S.

UN class

9

UN No. 3082

Packing group: III

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**15. REGULATORY INFORMATION**

EU label (This product has been classified in accordance with the EU Dangerous Preparations Directive 88/379).

Xn - Harmful.

R22- Harmful if swallowed.

R21- Harmful in contact with skin.

R41- Risk of serious damage to eyes.

R43- May cause sensitization by skin contact.

S36- Wear suitable protective clothing.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S27- Take off immediately all contaminated clothing.

S28- After contact with skin, wash immediately with plenty of

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**16. OTHER INFORMATION**

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

All tests were conducted following OECD guidelines for Good Laboratory Practices (GLP).

Please consult Monsanto if further information is needed.

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